

**WHAT IS CLAIMED IS:**

1. An apparatus (10) for pushing a number of packaging containers (12) which are supported in cassettes (18) in movement in a first direction in a packaging machine, said apparatus (10) comprising carriers (40) by means of which the packaging containers may be pushed from a first position to a second position in relation to said cassettes (18),

**characterised in that** the apparatus (10) comprises at least one belt (30, 32) which, in a first portion (34) of the apparatus (10), moves in a second direction and in a second portion (36) of the apparatus (10) moves in a third direction;

that, between the first and the second portions (34, 36), there is disposed a bending roller (24);

that the second and third directions each make an angle  $\alpha$  with the first direction;

that the carrier (40) is connected to a shaft (38) which is secured to the belt (30, 32) by means of a clamping device (42); and

that the centre point of the shaft is offset a distance (J) from the pitch line (L) of the belt in a direction substantially at right angles thereto inwards towards the bending roller (24) so that a mutual distance ( $X_1$ ,  $X_2$ ) between two shafts (38), measured in the first direction, is substantially of equal size regardless of whether both shafts (38) are located in the first or second portion (34, 36) or whether the shafts are located one on either side of the bending roller (24).

2. The apparatus (10) as claimed in Claim 1, wherein the length of the distance (J) from the belt pitch line (L) is calculated in accordance with the formula

$$J = \frac{K}{\sin \alpha}$$

where  $\alpha$  is said angle and K is calculated in accordance with the formula

$$K = R(\tan \alpha - \alpha)$$

where R is the radius from the centre of the bending roller to the pitch line (L) and where  $\alpha$  is disclosed in radians.

3. The apparatus (10) as claimed in Claim 1, wherein the carrier (40) is provided with a surface adapted for abutment against the packaging container (12) and is journaled on the shaft (38) in such a manner that the

surface of the carrier may rotate at least through said angle  $\alpha$  in relation to the shaft (38).

4. The apparatus (10) as claimed in Claim 1, wherein it comprises a first and  
5 a second pulley (20, 22) placed on the same height in relation to one another and placed on either side of the bending roller (24).

5. The apparatus (10) as claimed in Claim 1, wherein the belt (30, 32) is a  
10 toothed belt.

6. The apparatus (10) as claimed in Claim 5, wherein the clamping device  
(42) for securing the shaft (38) to the belt (30, 32) comprises a first part  
adapted for whole or partial abutment in a tooth gap in the belt (30, 32) and in  
support means (46) in the shaft (38), said support means (46) forming  
15 continuations of the tooth gap at each end thereof and in which support  
means (46) the first part (44) may be snapped down; and wherein the first  
part (44) at each end is connected to a second part (48, 50) in the form of a  
yoke element, the yoke elements (48, 50) being adapted to surround the  
shaft (38) so that there is formed a wrapping angle ( $\beta$ ) between the points of  
20 abutment of the first part in the support means (46) in the shaft (38) and the  
points of abutment of the yoke elements against the shaft (38) which is  
sufficiently large for the geometry of the shaft to be able to retain the  
clamping device (42) in a secured position.

25 7. The apparatus (10) as claimed in Claim 6, wherein the shaft (38) is  
provided with at least one depression (56) adapted to at least partly  
accommodate the belt (30, 32) and in which depression (56) the support  
means (46) are placed.

30 8. The apparatus (10) as claimed in Claim 7, wherein the flat surface of the  
toothed belt is adapted to abut against a corresponding surface (56a) in the  
depression (56) in the shaft (38).

9. The apparatus (10) as claimed in Claim 5, wherein each yoke element (48,  
35 50) has an outer end (52) which is adapted to be snapped each into a  
corresponding hole (54) in the shaft (38).